

AMENDMENTS TO THE SPECIFICATION

Please amend the paragraph starting on page 5, line 15 as follows:

By “extends adjacent the front windscreen” it is meant that the strengthening member is located either in front of the windscreen or between the driver and the front windscreen. Preferably, the strengthening member is placed either abutting the front windscreen or spaced from it by a small distance, for example in the range 2-20cm, as explained further below.

Please amend the paragraph starting on page 9, line 4 as follows:

Honeycomb sandwich structure composite materials of any nature may be used for example steel/titanium/carbon fibre/KEVLAR™ Kevlar/ plexi/reinforced polyamide 66/Glassfibre-reinforced PP, or any new alloy).

Please amend the paragraph starting on page 13, line 7 as follows:

Each of the a- pillars, b- pillars or c- pillars is preferably not solid, to further reduce visual obstruction. Each may be formed of perforated material or webs of solid material surrounding spaces. They may each be constructed from a linearly extending structural units combined together to provide a strong structure with minimal visual intrusion. They may each be formed of at least two first linearly extending structural units and other linearly extending structural units joining the at least two linearly extending structural units. In this case, the second structural units are preferably mounted so that they are not horizontal. Preferably, structural units of the a-pillar have a width not exceeding 65mm, preferably not exceeding 50mm, most preferably not exceeding 3.5cm, to minimise minimize visual obstruction. Preferably, at least the a-pillars are mounted so that they are adjacent

~~the front windscreen along the whole length of the a pillars, the a pillars preferably contacting the windscreen for less than 50%, preferably less than 40% and preferably less than 20% of their length.~~

Please amend the paragraph starting on page 14, line 11 as follows:

Tens of thousands of fatal accidents a year can be attributed to collisions with objects to the side of a vehicle. The additional strength provided to the centre of the windscreen by the strengthening member of the present invention will allow the ~~a pillars~~ a-pillars to be less visually obstructive and to reduce this kind of accident.

Please amend the paragraph starting on page 15, line 26 as follows:

The strengthening member (and, optionally, the ~~a pillars~~ a-pillars) may be asymmetrically aligned towards the position of the eyes of the driver for ~~optimised~~ optimized transparency. The angle of the pillars may thus ensure ~~secure~~ that the material width in the horizontal plane is always significantly less than the width between the drivers' eyes, and most preferably less than 40mm, whilst allowing the structural units to have sufficient thickness to have strength. The space between structural units of the strengthening member should be 65mm or slightly more in the horizontal plane in order to ensure ~~secure~~ that material does not block the lines of vision as the individual pupils of the eyes are considered to be spaced no more than 65mm.

Please amend the paragraph starting on page 16, line 10 as follows:

In order to prevent the additional structure provided by the strengthening member from increasing the weight of the vehicle excessively and raising the centre of gravity of the vehicle, it is desired to form it from light but very strong material.

Please delete the paragraph starting on page 18, line 3 as follows:

THIRD ASPECT OF THE INVENTION

~~The strengthening member of the third aspect of the invention may have any appropriate features as described above for the strengthening member of the first aspect of the invention.~~

Please amend the paragraph starting on page 18, line 29 as follows:

Suitable sensors are available to the person skilled in the art and they can be set at the correct sensitivity in order to move the strengthening member from the storage position to the first position to the second position under the correct conditions. ~~Suitable sensors have been designed in connection with the ERTICO programme.~~

Please amend the paragraph starting on page 22, line 17 as follows:

In a preferred embodiment, the strengthening member may be configured so that it is attached to a web of material which the driver can see, the web of material being drawn across at least part of the front windscreen when the strengthening member is extended to the second position. This web can be provided in order to catch debris, for example broken glass which can be very hazardous. It may be formed of a mesh or of a transparent or semi-transparent material, so that it does not obstruct the vision of the driver excessively. It may be made of any suitable material, for example a carbon fibre or KEVLAR™ ~~Kevlar (T M)~~ mesh.

Please amend the paragraph starting on page 25, line 12 as follows:

Figures 26a and 26b show the relationship of the strengthening member of figure 22 and new designs of a-pillar a-pillar in a vehicle.

Please amend the paragraph starting on page 26, line 1 as follows:

Figures 55-60[[62]] show various embodiments of strengthening member according to the second aspect of the invention.

Please amend the paragraph starting on page 26, line 10 as follows:

Figures 1 and 2 show a first embodiment of strengthening member and a vehicle comprising the strengthening member according to the present invention mounted inside the passenger compartment. A strengthening structure 1 comprises a strengthening member 2 according to the invention which, when assembled, extends adjacent the front windscreen [[3]] 103 of the vehicle. The strengthening member 2 is connected to a second strengthening member which comprises a pair of ribs 4 which are substantially parallel to one another and which are placed inside and contacting the roof structure 5 of the vehicle. The two ribs 4 come together at a point where they contact a third strengthening member 6 which in use contacts the rear window 7 of the vehicle. The vehicle shown in figure 2 is accordingly provided with additional support for each of the windscreens [[3]] 103, roof structure 5 and rear windscreens 7. The support is located between the edges of the structures and directly in contact with them, on the inside whereby considerable support can be obtained. It can be seen that the strengthening member 2 comprises a number of webs with lightening holes, for example 8 as shown in first section 2 in figure 1, to make the structure light and to minimize impact on the driver's field of view. However, with correct design as is well known in the art of the design of girders, beams and other strengthening members, this may have no substantial effect upon the strength of the design.

Please amend the paragraph starting on page 27, line 20 as follows:

It is not necessary to have two separate arms if the main part of the strengthening member 2 is sufficiently strong, and a single rib [[8]] 108 may be used as shown in figure 6. ~~Alternatively, a pair of substantially parallel ribs 12 may be used as shown in figure 11. Similar structures may be adopted for the third section 6.~~

Please amend the paragraph starting on page 28, line 18 as follows:

Figure 9 shows a soft-top vehicle in which there is only a strengthening member 10, adjacent the windscreen. All the other vehicles shown in figures 10-14 have hard tops and each comprises a strengthening structure 11 which extends continuously from the front structure to the rear structure, providing support for all of the front windscreen, roof structure and rear windscreen.

Please amend the paragraph starting on page 29, line 16 as follows:

Figure 20[[17]] shows an embodiment in which a solid structure 23 is provided with a plurality of lightening holes 24[[26]]. Figure 21[[18]] shows a different embodiment 26 in which the lightening holes 25 are of a different shape.

Please amend the paragraph starting on page 29, line 26 as follows:

It comprises a first longitudinally extending member 28 which is swept back at an angle corresponding to the angle of the windscreen of the vehicle to which it is to be fitted. There [[are]] is a pair of second longitudinally extending units 29 and 30, which are swept back at the same or substantially the same angle as the first member 28. They are joined to the first member by struts 31

at the bottom and 32 near the top. The struts 31 and 32 are not horizontal, to ~~minimise~~ minimize visual intrusion. The longitudinally extending members 28, 29 and 30 join a pair of a v-shaped mounting members 34[[33]] and 33[[34]] which are for engaging the structure of the vehicle above the windscreen (or the top of the windscreen) and the structure of the vehicle below the windscreen respectively. The top of the v-shaped member 34 is shown hatched to indicate an area where adhesive 35 may be applied to form a bond with the top structure of the vehicle. Alternatively, mechanical connections such as screws and bolts may be used. Similar connecting means may be used in the lower v-shaped part 33.

Please amend the paragraph starting on page 30, line 16 as follows:

Honeycomb sandwich structure composite materials of any nature may be used depending on strength/cost requirements (Steel/titanium/KEVLARTM Kevlar/ plexi/reinforced polyamide 66/Glassfibre-reinforced PP, or any new alloy).

Please amend the paragraph starting on page 30, line 25 as follows:

The width of each of the longitudinally extending members 28, 29 and 30 and the struts 32, 31 presented to the driver does not exceed more than 50% of the minimum normal eye spacing of drivers, being not less than about 3cm. All of the members are tilted so that they do not form an obstruction to seeing horizontally extending objects. Many objects on the road are either generally vertically extending, such as cyclists, the sides of vehicles, roadside furniture, or horizontally extending for example the super structure of many vehicles. Figure 23 shows how the obstruction of the driver's field of view is ~~minimised~~ minimized by the structure of Figure 22.

Please amend the paragraph starting on page 30, line 34 as follows:

The structure 27 is located adjacent to the front windscreen 36 located approximately 1m from the driver 37. The width W of the longitudinally extending numbers of the structure 27 presented to the driver are less than 3cm, so that the area (shown cross hatched) which is not visible to either eye of the driver 37 is minimised minimized. It can be seen that the area which is not visible to the driver extends for a distance of approximately 1m from the structure. As this distance is less than the normal distance to the front bumper of the vehicle, it is clear that no object which is on the road will be obscured.

Please amend the paragraph starting on page 31, line 24 as follows:

The whole area of the drivers field of vision subtended by the a-pillar 38 is shown ~~at 39 in~~ Figure 23. It can be seen that this comprises a central area, lightly hatched, 40 which in practice will be visible to the driver using the design according to figure 22. This area would not be visible using a conventional design of a-pillar. The area, deeply hatched, not visible is clearly very small and does not extend for a significant distance beyond the a-pillar.

Please amend the paragraph starting on page 32, line 24 as follows:

The a-pillar 43 is constructed with spaces in it, shown in Figure 22 to enhance the view forward and to the side as described above. The b-pillars 44[[45]], c-pillars 45[[44]] and the rear structure 46 are formed in a conventional manner. However, the inventor has realised realized that all of these structures may be made of light material with spaces in the structure to enhance the view all round as shown in figure 25. Here there is a strengthening member 47 according to the invention adjacent to the front windscreen, a strengthening member 48 adjacent the roof, a strengthening member 49 adjacent the rear windscreen and perforated structures 50, 51 and 52 defining the a-, b-,

and c-pillars. This creates a very open “cage” through which the driver obtains a clear all round view.

Please amend the paragraph starting on page 35, line 1 as follows:

The top view shown in figure 37 shows that the strengthening member 62 comprises a grid of longitudinal members which are parallel to the direction of motion of the car and horizontal members 63 which are transverse to the direction movement of the car. This forms a ~~form of~~ grid across the windscreens for protecting the whole of the windscreens from impact. A strengthening member 64 according to the first aspect of the invention and extending from the front of the vehicle to the rear of the vehicle is provided to provide a further support which the reinforcing member 62 can engage.

Please amend the paragraph starting on page 36, line 31 as follows:

In figures 55-57, various further types of strengthening member are shown. Figures 48A-C and 54A-C show further embodiments of strengthening member according to the second aspect of the invention, in different stages of deployment. Figure 58 shows how a plurality of strengthening member units 75 can be provided which pivot upwards from a storage position adjacent the lower edge of a windscreens to a second position in which they lie adjacent to the windscreens.

Please amend the paragraph starting on page 37, line 25 as follows:

In Figure 60, a strengthening member is shown which comprises two strengthening member units 80. Each strengthening member unit 80 comprises an arm having two arm sections 81, 82 which are hinged in the middle at a hinge 83. The free end of each arm 82 is pivoted adjacent a lower edge of the windscreens at 84. The free end of the other arm 81 is mounted on a slider 85. The

slider is acted against by a spring 86. The spring is held in a spring housing ~~unit~~ 87 which itself is pivoted at the bottom 88. In the storage position (not shown) each ~~slide~~ slider 85 is held near the base of the unit 87 so that the spring 86 is tightly compressed. In this position, each arm 82 comes to rest adjacent the lower edge of the windscreens but not visible to the driver. When an impact, rollover or approaching object is detected, an actuator releases each slider 85 so that it moves very quickly along the housing 87 to the top, raising each arm 82 and 81 so that a brace structure is formed adjacent the windscreens for resisting impacts. In the second position, the top parts of the arms 82 each come to rest in engaging means 89 which hold them so that movement in the longitudinal direction of the vehicle is resisted.

Please amend the paragraph starting on page 38, line 23 as follows:

Figures 63,64 and 65 show various views of a first embodiment, in which a narrow, longitudinally extending web 94 at the front of the member protects the driver from impact from objects to the front. It is supported at the rear by narrow lateral members 95.

Please amend the paragraph starting on page 39, line 6 as follows:

The strengthening members of fig.63, 64, 65, 66, 67 and 68 may be made static, according to the first aspect of the invention and as seen in the drawings, or as an active pop-out dynamic system according to the second aspect of the invention. They may be pre-tensioned, or activated by other means. They may be triggered by ITS micro chipped sensor systems similar to all systems for fig. 29 through to fig. 62.

Please amend the Abstract as follows:

The present invention provides a road vehicle ~~comprising~~ having at least one strengthening member fixed to a structure of the vehicle, preferably extending adjacent to [[the]] a front windscreen of the vehicle, between lateral edges of the front windscreen, wherein the strengthening member is dimensioned so that it will not prevent the driver from seeing an object which is at least two meters from the front windscreen, ~~when the driver uses binocular vision and without requiring the driver to move the driver's head~~. The present invention may further provide a road vehicle ~~comprising~~ having at least one strengthening member which, ~~in a first, storage position is retracted and in a second, extended position, extends between structures of the vehicle~~ retracts to a first position and extends to a second position, and ~~operating means for moving the strengthening member is movable~~ from the first position to the second position, ~~wherein, if the reinforcing member is for extending adjacent the front windsreen in the extended position, it permits the driver to see through the front windsreen in the second position~~. A particular type of strengthening member is formed of at least ~~two~~ three first linearly extending structural units for extending from the front structure of the vehicle and second linearly extending structural unit joining the at least ~~two~~ three first linearly extending units, ~~the second structural units being not horizontal, and wherein the first linearly extending structural units of strengthening member have a width not exceeding 65mm in the horizontal plane~~.